414 Impact of prosthesis-patient mismatch on long-term survival in patients with biological prostheses in the aortic position

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Background: The impact of aortic prosthesis-patient mismatch (P-PtM) on long-term survival is unclear (P-PtM has been defined as an indexed effective orifice area (IEOA) ≤0.8 or 0.85 cm²/m² in the literature).

Purpose: Cohort analysis of P-PtM impact on mortality and functional status.

Method and results: Between 1994 and 2004, 1003 patients underwent aortic valve replacement (AVR) with Mosaic Medtronic biological prostheses and had transthoracic aortic echocardiography within 1 year after AVR. Mean age of patients was 75±6.8 years; 18.3% were ≥80 years old. Mean body surface area was 1.8±0.2 cm²; Prosthetic size was 19 in 4.7%, 21 in 28.3%, 23 in 44.1%, 25 in 19.1% and 27 in 3.8% of the 1003 patients. The mean follow-up was 3.7±2.6 years. Prosthesis-IEOA was derived from the continuity equation. P-PtM was classified as severe (IEOA ≤0.60 cm²/m²), moderate (0.60 cm²/m² < IEOA ≤0.80 cm²/m²), or not significant (IEOA >0.8 cm²/m²). P-PtM was severe in 1.6%, moderate in 60.4% of the 1003 patients.

189 deaths were observed during the follow-up (5.1%). Operative mortality was higher in IEOA ≤0.80 cm²/m² (6.0% vs 3.5%, p=0.002). Mean IEOA was 0.85±0.15 in the death-group vs 0.78±0.11 in the survival one (p<0.001). The Kaplan-Meier curves are displayed figure 1. Mean trans-prosthetic gradient was 0.85±0.15 in the death-group vs 0.78±0.11 in the survival one (p<0.001). Between 1994 and 2004, 1003 patients underwent aortic valve replacement (AVR) with Mosaic Medtronic biological prostheses and had transthoracic aortic echocardiography within 1 year after AVR. Mean age of patients was 75±6.8 years; 18.3% were ≥80 years old. Mean body surface area was 1.8±0.2 cm²; Prosthetic size was 19 in 4.7%, 21 in 28.3%, 23 in 44.1%, 25 in 19.1% and 27 in 3.8% of the 1003 patients. The mean follow-up was 3.7±2.6 years. Prosthesis-IEOA was derived from the continuity equation. P-PtM was classified as severe (IEOA ≤0.60 cm²/m²), moderate (0.60 cm²/m² < IEOA ≤0.80 cm²/m²), or not significant (IEOA >0.8 cm²/m²). P-PtM was severe in 1.6%, moderate in 60.4% of the 1003 patients.

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Conclusions: Silent valvular regurgitation, detected during routine echocardiographic evaluation, is very common among healthy children. In the presence of a morphologically normal aortic and mitral valve it should be interpreted as a normal finding.

415 Identifying valvular & structural heart disease using brain natriuretic peptide: a three assay comparison

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Objective: BNP has a widely developing role in predicting cardiac disease other than just LV dysfunction. We evaluate the use of three separate serum Brain Natriuretic Peptide (BNP) assays combined with other demographic and clinical data to predict significant valvular heart disease and other structural abnormalities in a cohort of patients with suspected heart failure.

Design: Prospective, single blinded cohort study of 95 patients referred by General Practitioners for open access Echocardiography. The echocardiograms were blinded to the serum BNP levels. Setting: A UK District General Hospital. Variables: Age, sex, British society of echocardiography (BSE) standard adult echocardiogram, creatinine, chest x-ray (CXR), ECG, cardiovascular risk factors, symptoms and signs, medication, simultaneous (R-PBNP) E170 NT proBNP (B-PBNP), Bayer® Centaur BNP (SC-BNP) & Biosite® Triage BNP (BT-BNP) levels.

Results: A total of 93 echocardiograms were of diagnostic quality. Including ventricular dilatation and dysfunction, or valve disease or ventricular hypertrophy classed as moderate or severe, a total of 19 patients had abnormal echocardiograms (20%). The R-BNP assay had the highest negative predictive value at 95%, but lacked specificity when compared with the other assays (R-pBNP: sensitivity 89%, specificity 55%, positive predictive value (PPV) 34%, negative predictive value (NPV) 95%; BC-BNP: sensitivity 63%, specificity 85%, PPV 52%, NPV 90%; BT-BNP: sensitivity 58%, specificity 96%, PPV 48%, NPV 89%).

Conclusions: As well as predicting absence of LVSD, a negative BNP appears to be a reliable predictor of a structurally normal heart. Used alone to predict a normal echocardiogram, BNP can offer a substantial reduction in departmental workload (R-BNP 45.3%, BC-BNP & BT-BNP 73.7%).

416 Prevalence of echocardiographic valvular regurgitation in healthy children

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Although clinically significant heart valvular insufficiency is rare in childhood, the use of sensitive modern echocardiographic systems could result in an increased prevalence of silent valvular regurgitation among otherwise healthy children.

Aim: To evaluate the prevalence of echocardiographic valvular regurgitation (VR) among healthy school age children of Mediterranean origin.

Patients-Methods: A group of 125 consecutive healthy, (62 boys, 63 girls, median age 8.8 yrs, range 8.2 to 10.2 yrs) participating to the initial phase of Cretan Pediatric Cardiology Survey (CPCS), were enrolled to the study. CPCS is a large scale population based study of the cardiovascular health of school age children of Cretan origin, approved by the Greek Ministry of Education. Participants underwent a detailed evaluation including cardiac auscultation, ECG and echocardiography (using a Vivid 3 Expert, GE System and age appropriate transducers). Echocardiographic valvular incompetence was considered as insignificant in the presence of trace (at the level of valve leaflets, detected by colour Doppler) or mild (beyond the level of valve leaflets, detected additionally by PW Doppler) regurgitation. Cases of more severe valvular regurgitation, or prolapse (in cases of MVR) and/or abnormal auscultatory findings, were considered as significant.

Results: Pulmonary VR was present in 88% (trace 85%, mild 3%), tricuspid VR in 72% (trace 66%, mild 6%), mitral VR in 45.6% (trace 44%, mild 1.6%) and aortic VR in 24% (trace 20%, mild 4%) of children. Valvular regurgitation was either isolated (18%) or combined (70%) (involving two (28%), three (30%) or four valves (12%). Mitral valve prolapse and bicuspid AoV were detected in 4.8% and 8% of children; their presence was associated with an increased likelihood for valvular regurgitation (O.R=5.6 and O.R=23.6 for AVR and MVR respectively, p<0.005). Clinical auscultation alone failed to detect children with mild echocardiographic valvular regurgitation.

Conclusions: Silent valvular regurgitation, detected during routine echocardiographic evaluation, is very common among healthy children. In the presence of a morphologically normal aortic and mitral valve it should be interpreted as a normal finding.

417 Valvular heart disease in patients with Parkinson disease treated with pergolide

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Restrictive valvular heart disease has been reported in patients with Parkinson disease treated with pergolide. However, few data are available on actual frequency, severity and dose-dependency of pergolide-induced disease. Aim: To evaluate in a double blind and prospective study, the presence of valvular heart disease in patients treated with pergolide versus patients with Parkinson disease age-sex matched never treated with pergolide (controls).

Patients and methods: 26 patients treated with pergolide and 26 never treated were evaluated by echocardiography. Systolic and diastolic function, valvular heart disease and systolic pulmonary artery pressures (SPAP) were determined.

Results: Mean cumulative doses of pergolide was 4401 mg y daily doses was 2.19±1.24 mg/day. Mean time of treatment was 64±3.5 months. Some of the results are in the table. Mitrail and aortic mild esclerodegenerative changes without any repercussion were frequent in both groups as is expected in this older population. In the pergolide group, important restrictive valvular heart disease was present in two patients (2/26) with significant mitral and tricuspid regurgitation and none in the control group (in this non pergolide group, significant regurgitations were related to degenerative valvular heart disease, no restrictive). No association was found between doses and time of treatment and the presence of restrictive valvular disease.

Conclusion: In our patients with Parkinson’s disease treated with pergolide doses <5 mg/d, pergolide-induced restrictive valvular heart disease is present in 8% of patients, a lower frequency than previously reported.
Valves were observed only in PD patients treated with pergolide. Nevertheless, discrete fibrous changes with restrictive leaflet motion of left-sided valves were not associated with clinically relevant valvular disease. Neverthless, the mitral valve tenting area was significantly increased (from 55.5±7 to 65.4±5%, t=-3.95, p<0.005). Significant decrease in LV ejection fraction (from 64±7 to 57±7%, p<0.001) and augmented mitral annular systolic excursion were observed in patients with both CAD and PAD.

Table 1

<table>
<thead>
<tr>
<th>Pergolide (n 26 p)</th>
<th>No pergolide (n 26 p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (y)</td>
<td>73±8</td>
</tr>
<tr>
<td>Sex (men)</td>
<td>53%</td>
</tr>
<tr>
<td>Mitral anterior leaflet (mm)</td>
<td>3.97</td>
</tr>
<tr>
<td>MR/Ao/Tr grade 0</td>
<td>8/10/10 p</td>
</tr>
<tr>
<td>1</td>
<td>3/11/13 p</td>
</tr>
<tr>
<td>2</td>
<td>3/4/5 p</td>
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<td>0/0/0 p</td>
</tr>
<tr>
<td>4</td>
<td>2/10/0 p</td>
</tr>
<tr>
<td>SPAP (mm Hg)</td>
<td>29.6±14</td>
</tr>
</tbody>
</table>

418 Clinically relevant valvular heart disease is rare in Parkinson's disease patients treated with pergolide

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Background: Therapy with pergolide, an ergot-derived dopamine receptor agonist, is associated with retroperitoneal, pleural and pericardial fibrosis. The aim of this study was to investigate the relationship between the long-term use of pergolide and the prevalence of restrictive valvular heart disease.

Methods: The study population consisted of 95 patients (age 61±9 years, 24% female) with Parkinson's disease (PD) treated with pergolide and 35 healthy controls matched for age and gender. All subjects underwent transthoracic echo-Doppler examination. Valve morphology was graded as normal, restrictive or degenerative. Mitral valve tenting area and tenting distance were assessed from parasternal long-axis views.

Results: Average daily dose of pergolide, cumulative dose and median duration of treatment were 2.93±0.72 mg, 4534±1932 mg and 51.6±23 months, respectively. Severe valvular heart disease or pulmonary hypertension was not observed in any subject. Two PD patients (2.1%) and one control (2.9%) had moderate degenerative aortic regurgitation. Discrete fibrous thickening of the left-sided valves was noted in 16 PD patients (16.8%) as compared to none of the controls (p=0.01). Mitral valve was affected in 10 patients and aortic valve in 6 patients. Regurgitation was not observed on any of the affected valves. Of note, in the PD patients, the mitral valve tenting area was significantly larger than in controls (1.44±0.03 cm² vs 1.05±0.05 cm², p=0.0001).

Conclusions: The present study demonstrated that long-term use of pergolide is not associated with clinically relevant valvular disease. Nevertheless, discrete fibrous changes with restrictive leaflet motion of left-sided valves were observed only in PD patients treated with pergolide.

419 Biological ring in mitral-valve repair: echocardiographic evaluation of mitral annulus dynamics and left-ventricular function with pericardial annuloplasty

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Objective: Annular dynamics play an important role in the valvular and ventricular function. We evaluate the effects of pericardial annuloplasty rings on mitral annulus dynamics and left-ventricular (LV) function after mitral-valve repair.

Material and methods: 100 consecutive patients were prospectively enrolled. All patients had myxomatous mitral valve with severe regurgitation and underwent identical surgical mitral-valve reconstruction. All patients underwent mitral annuloplasty with an autologous pericardial ring and other method of repair depends on involved segments. Post-operative echocardiographic study did not show significant mitral regurgitation at rest or at peak exercise in any patient. There was significant increased in TMFV (from 1.1±0.20 to 1.68±0.22 ml/s, t=6, p<0.0001). Recruitment of LVEF reserve during exercise was observed in 55.5±7 to 65.4±5%, t=3.95, p<0.0005. Significant increased MASE at all the studied longitudinal segments at rest and during exercise was observed in all patients. No calcifications have been observed on pericardial rings.

Conclusions: The autologous pericardium for annuloplasty in mitral valve has excellent mitral annulus dynamics and preserves LV function during stress conditions. Effective annular remodelling with the autologous pericardium is shown, with no echocardiographic sign of degeneration. Further studies are required to compare biological versus flexible prosthetic rings in mitral valve repair.